SARS-CoV-2 Infection Prevention and Control: Improving Mask Fit and Filtration

Maine CDC Healthcare Epidemiology Program

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Why Wear A Mask & Physically Distance?

Masks: are a simple barrier to prevent your respiratory droplets from reaching others. Studies have shown that masks reduce the spray of droplets when worn over the nose and mouth.

- Masks can help to protect you from breathing in the virus. Effectiveness likely depends upon the fit and filtration of the mask worn.
- A mask should always be worn in healthcare if you are fully vaccinated or not fully vaccinated (i.e., source control).

Physical distancing: staying at least 6 feet apart prevents the spread of respiratory droplets from person to person.

But I'm fully vaccinated?

- While preliminary data suggest fully vaccinated individuals are less likely to have asymptomatic infection and potentially less likely to transmit SARS-CoV-2 to others, research is still being conducted. If you've been vaccinated it may be possible for virus to be present in your nose or mouth and to unknowingly spread it to those around you. The risks of SARS-CoV-2 infection in fully vaccinated people cannot be eliminated as long as there is continued community transmission of the virus. Vaccinated people could potentially still get SARS-CoV-2 and spread it to others.
- Modeling studies suggest that preventative measures such as mask use and physical distancing continues to be important.

https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/fully-vaccinated-people.html#:~:text=Evidence%20suggests%20the%20U.S.%20COVID,and%20interrupting%20chains%20of%20transmission.

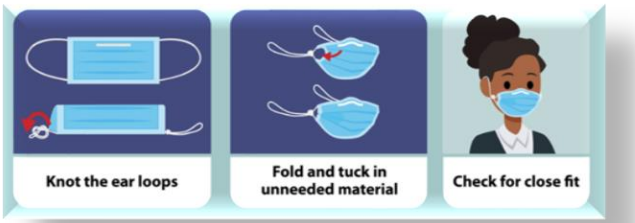
Mask Fit and Filtration

Source Control in Healthcare - one of the following should be worn by healthcare workers for source control:

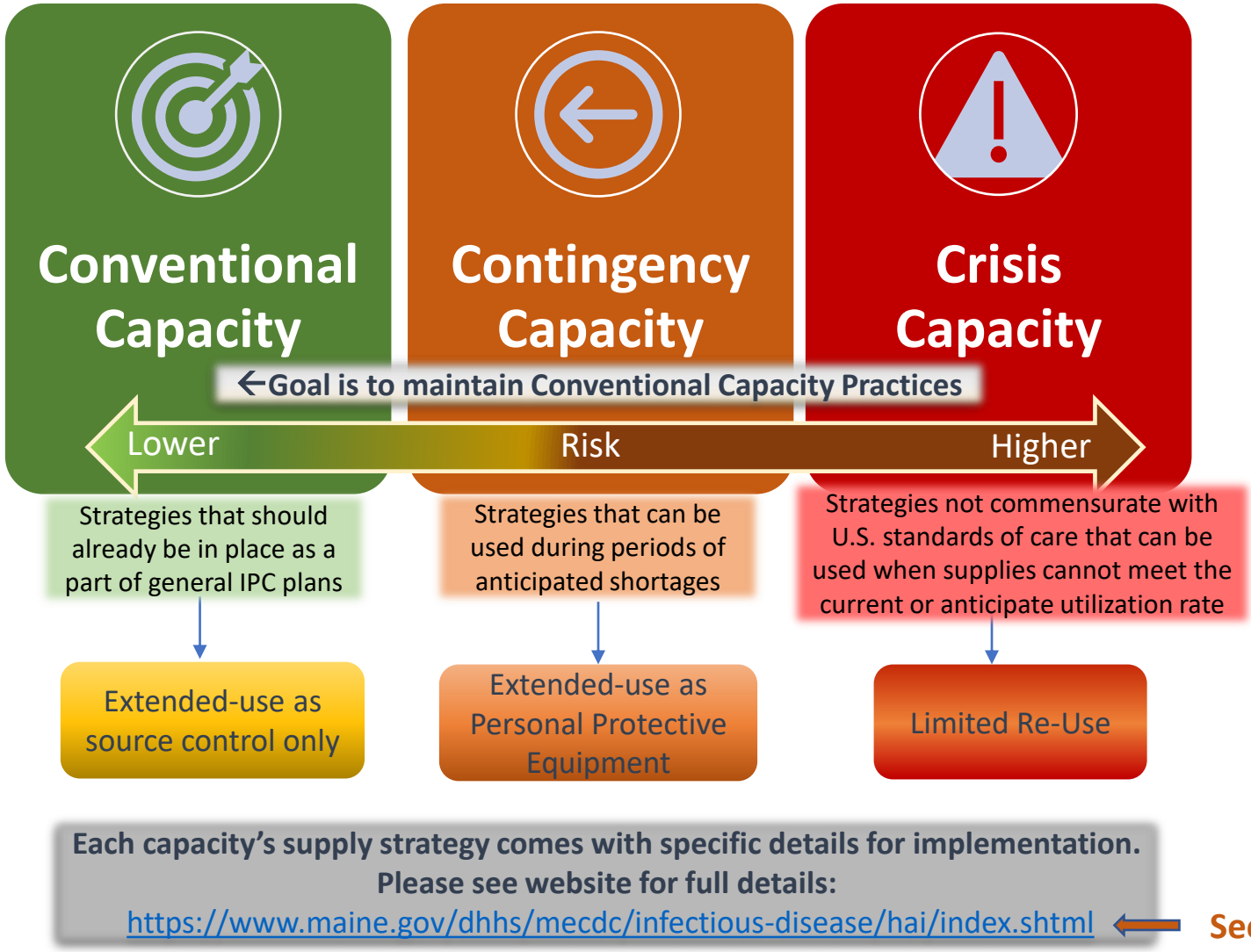
- **A facemask with improved fit and filtration**
  - **Fit**: use facemasks that conform to the wearer's face so that more air moves through the material of the facemask rather than through gaps at the edges are more effective for source control
  - **Filtration**: The more layers a facemask has will help in reducing the number of respiratory droplets containing the virus that comes through the mask. A single layer mask is not sufficient.

– OR –

- **A NIOSH approved N95 respirator**
  - **Follow Extended-use guidelines as listed in *Conventional Capacity* supply strategies:**
    - N95s can be considered for source control, to cover one's mouth and nose to prevent spread of respiratory secretions when talking, sneezing, or coughing.
    - When used for this purpose, N95s may be used until they become soiled, damaged, or hard to breathe through. They should be immediately discarded after removal.
  - **Fit-Testing:** any disposal respirator, needs to be fit-tested by make/model/size
  - **A fit/seal-check *must be performed*** when donning**.**
  - **If during the practice of extended use the N95s are also being used as respiratory protection (PPE), it is considered a *Contingency Capacity* Strategy and facility would need to follow those guidelines.**



Supply Capacities



Each capacity's supply strategy comes with specific details for implementation. Please see website for full details:
https://www.maine.gov/dhhs/mecdc/infectious-disease/hai/index.shtml ← **See this link for more details!**

***Note**: recommended the person responsible for respiratory protection at the facility/facilities, review the above Federal CDC guidance on PPE capacity and extended-use limited-reuse to determine if they can safely implement. Although extended use and reuse of respirators have the potential benefit of conserving limited supplies of disposable N95 respirators, it comes with potential risk. The most significant risk is of contact transmission from touching the surface of the contaminated. Note, some devices have not been FDA-cleared for reuse. Some manufacturers' product user instructions recommend discard after each use (i.e., "for single use only"), while others allow reuse if permitted by infection control policy of the facility.*

Types of Masks

Medical Procedure Masks (sometimes referred to as Surgical Masks or Disposable Face Masks)

Medical procedure masks (including surgical masks) intended for community use are commercially available and are often sold as "disposable face masks."

What to look for

- Check the labels to ensure that they are made of multi-layered, non-woven material.

Features

- Generally have ear loops that fit behind the ears. However, some available options have cords that tie around the head and neck rather than ear loops.
- Some have a nose wire (a metal strip along the top of the mask) that can help to improve fit.

Pros: Easy to obtain; comfortable; affordable; convenient; disposable (good for situations when the mask may get wet or dirty); nose wires (if available) can be adjusted.

Cons: These masks often fit loosely. Masks with ear loops may not be adjustable enough to achieve a better fit. Masks with tie cords can provide a better fit for some people. Poor fit causes gaps around the nose and along the sides of the face where respiratory droplets containing the virus can leak in and out; designed for one-time use.

Additional Considerations: A medical procedure mask can be layered underneath a cloth mask for improved fit and filtration. However, a medical procedure mask should not be layered underneath a second medical procedure mask. Using a mask fitter or brace may also help to improve fit

Types of Masks

Cloth Masks

Cloth masks can be made from a variety of natural and synthetic fabrics and fibers, and many types of cloth masks are available.

What to look for

- Look for a cloth mask that is made of multiple layers of tightly woven, breathable fabric.
- Make sure your cloth mask blocks light from coming through the fabric if held up to a bright light source.

Features

- Can have ear loops that fit behind the ears or cords that tie around the head and neck.
- Some have a nose wire (a metal strip along the top of the mask) that can help to improve fit.
- **Note: Do NOT** wear cloth masks with exhalation valves or vents since they allow respiratory droplets containing the virus to escape.

Pros: Easy to obtain; comfortable; affordable; convenient; washable and reusable; ear loops, tie cords, and nose wires (if available) can usually be adjusted.

Cons: Poorly fitting masks may have gaps around the sides of the face or nose. Gaps may allow respiratory droplets containing the virus to leak in and out around the mask. Depending on how they fit and how they are made, cloth masks vary in how well they can protect you and others from getting and spreading COVID-19.

Additional Considerations: A cloth mask can be layered on top of a medical procedure mask for improved fit and filtration. Using a mask fitter or brace may also help to improve fit.

Note: cloth masks are not considered PPE, since their capability to protect a healthcare worker is unknown.
https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/face-masks.html

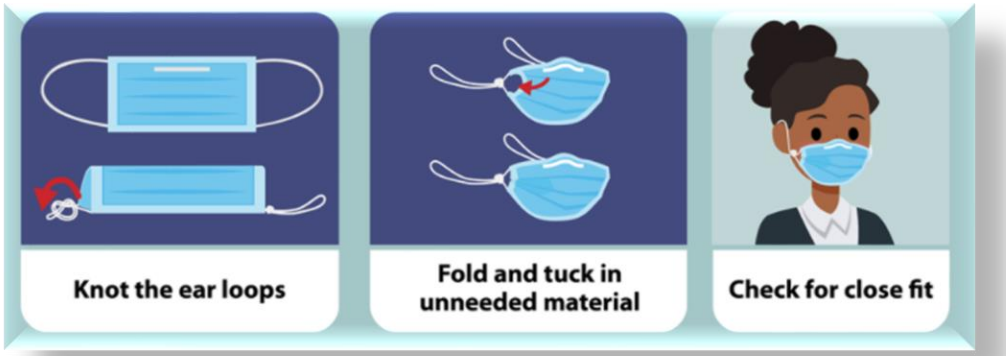
Mask Do's

Choose a mask with a nose wire. Nose wires prevent air from leaking out the top of the mask.

Use a mask fitter or brace over a disposable or cloth mask to prevent air from leaking around the edges.

Check the mask fits snugly over nose, mouth, and chin.

Check for gaps by cupping your hands around the outside edges of the mask. Make sure no air is flowing from the area nears your eyes or form the sides of the mask. If you have a good fit, you will feel warm air come through the front of the mask and may be able to see the material move in and out with each breath.

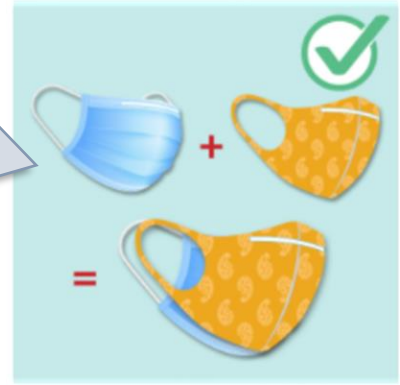


Knot and tuck ear loops of a 3-ply mask.

For instructions, see the following https://youtu.be/GzTAZDsNBe0external icon

Add layers of material.

- Disposable under a cloth mask. *Note: think about how you will manage cleanliness of cloth masks*. https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-to-wash-cloth-face-coverings.html
- Mask should block light when held up to a light source



Mask Do's

1

Carefully unite the strings behind your head or stretch the ear loops.

2

Handle only by the ear loops or ties.

3

Discard.
If cloth, fold outside corners together and follow instructions for cleaning.

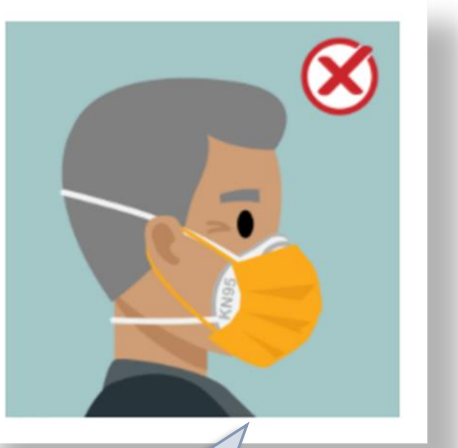
4

Be careful not to touch your eyes, nose, and mouth when removing and perform hand hygiene immediately after with an alcohol-based hand sanitizer or soap and water.

Federal CDC video tutorial: https://www.youtube.com/watch?v=dSvff0QljHQ

Masks Don’ts

Do not combine two disposable masks.
Disposable masks are not designed to fit tightly and wearing more than one will not improve fit.



Do not combine a KN95 mask with any other mask.

Dot not wear:

- A KN95 if you have certain types of facial hair
- Counterfeit KN95s, nothing about 60% of KN95s in U.S. are fake
- KN95s that do not meet NIOSH requirements.

Masks with one layer

Masks that do not fit properly (large gaps, too loose or too tight)

Not recommended: Evaluation of face shields is ongoing, but effectiveness is unknown at this time.

Have exhalation valves or vents which allow virus particles to escape

Around your neck

On your forehead

Under your nose

Only on your nose

On your chin

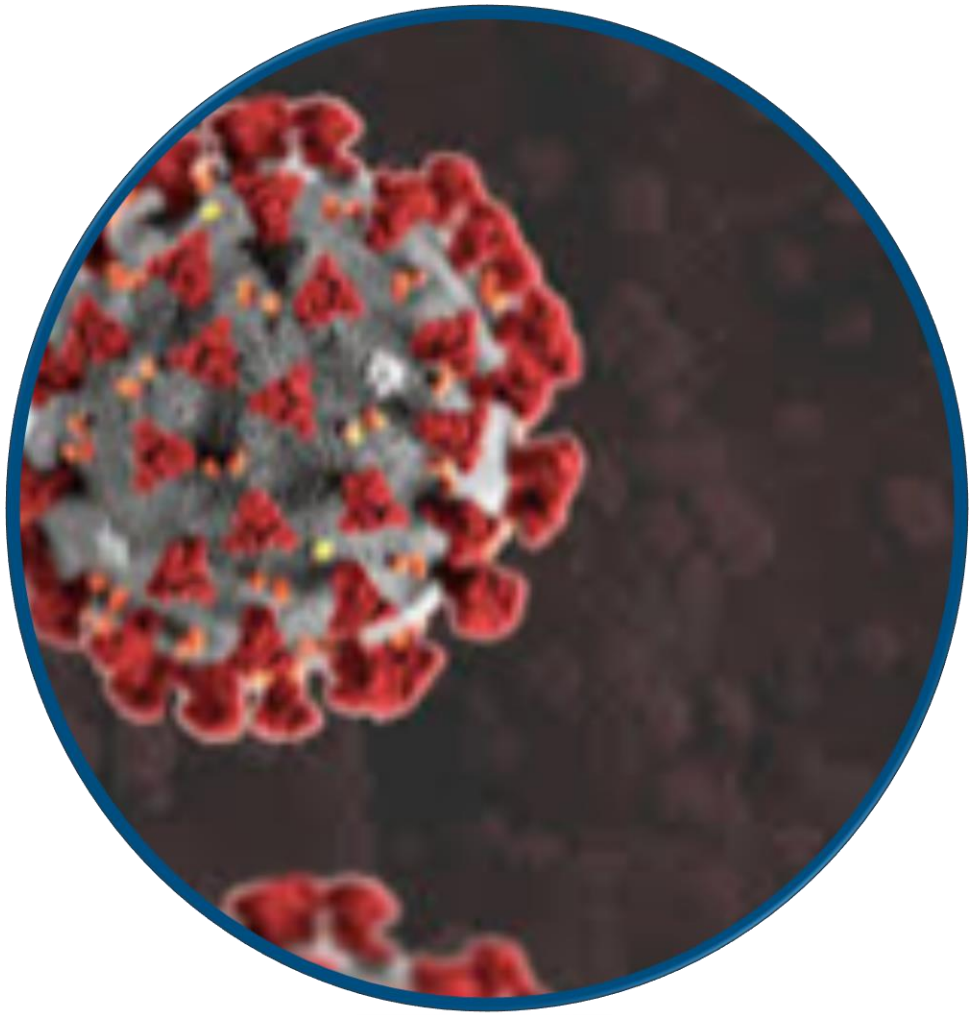
Dangling from one ear

On your arm

Mask Fit and Filtration

Other Considerations:

- Ensure breathing is not difficult
- Vision should not be obstructed
- Certain types of facial hair, like beards, can make mask fitting difficult. People with beards can do one or more of the following:
  - Shave
  - Trim the beard close to the face
  - Use a mask fitter or brace
  - Wear one disposable mask underneath a cloth mask that has multiple layers of fabric. The second mask should push the edges of the inner mask snugly against the face and beard



References

- *https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/face-masks.html*
- https://www.cdc.gov/coronavirus/2019-ncov/your-health/effective-masks.html
- https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover-guidance.html
- https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/mask-fit-and-filtration.html
- https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/about-face-coverings.html

Questions? E-mail MECDC.HAI@maine.gov